



**DR.HOMI BHABHA STATE UNIVERSITY**



# **ELPHINSTONE COLLEGE MUMBAI**

Masters of science ( M.Sc. ) Program in  
**INDUSTRIAL BIOTECHNOLOGY**

**ADMISSIONS OPEN for 2022-23**

## **Eligibility**

Bachelors in any Life sciences (Botany, Biochemistry, Biotechnology, Environmental science, Life science, Microbiology, Zoology, Pharmacy, Veterinary science), B.Tech (Biotechnology)



## **Mode Of Selection**

Graduation Marks and Interview

## **Course Details**

DURATION: 2 Years

TYPE: Full Time



**Apply here - <https://enrollonline.co.in/Registration/Apply/ECM>**

## **Background -**

- Known for its 160 years legacy, Elphinstone college, a constituent college of Dr. Homi Bhabha State University is the first Cluster University of Maharashtra State, established in February 2019 under Rashtriya Uchchar Shiksha Abhiyan (RUSA) program of Government of India.
- Elphinstone college has served the nation for more than 160 years through value-based education and philosophy and upholds a mission of excellence in education.
- Dr. Homi Bhabha State University is working relentlessly for the development of different courses in the light of New Education Policy-2020 considering the benefits of all the stakeholders to achieve all-round development of students and in lieu to this, Department of Biotechnology of Elphinstone college is offering a two years Post graduate degree M.Sc. in Industrial Biotechnology from the academic year 2021-22.

## **Course Highlights -**

- Experienced faculty
- Emphasis on increasing research competencies and hands on experience Course designed as per current top educational standards
- A full semester dedicated to Industrial training
- Laboratory facility
- Library facility

## **Career and Job opportunity -**

- The course is beneficial for individual to develop a career in a number of related areas including: pharmaceutical and fermentation industries, as well as recombinant DNA and microbial related research laboratories.
- The learners can find careers with pharmaceutical companies, food manufacturing and processing industries, public funded laboratories, chemical, agriculture, environment control, waste management, energy, and allied industries.
- Biotechnologists can be employed in the areas of planning, production and management of bio-processing industries.
- They can become teacher and lecturer in schools and colleges respectively; for becoming permanent lecturer in college/universities only after completing CSIR-NET exam.
- Some of the job profiles in this field are Trainee Research Associate, Technical Solution Manager, Accounts Manager, and many other job profiles.



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ELPHINSTONE COLLEGE 156, M.G.Road,  
Fort, Mumbai-400 032.



**DR. HOMI BHABHA STATE UNIVERSITY, MUMBAI**

**(ESTD. FEB., 2019)**



**Government of Maharashtra**

**ELPHINSTONE COLLEGE**

**(Estd. 1856)**

**Re-accredited 'A' Grade by NAAC**

**(A Constituent College of DR. HOMI BHABHA STATE UNIVERSITY, MUMBAI)**

**Faculty of Science & Technology Program Structure**

**M.Sc. -Industrial Biotechnology**

**2021-2022**

**Dr. Homi Bhabha State University  
Proposed course in M.Sc. (Industrial Biotechnology)**

## Proposal Summary

<b>Proposed by</b>	Department of Biotechnology Elphinstone College, Mumbai
<b>Course level</b>	Post graduate
<b>Duration</b>	2 years
<b>Course name</b>	M.Sc. - Industrial Biotechnology
<b>Proposed start date</b>	AY 2021-22
<b>Proposed strength</b>	20
<b>No. of Batches</b>	01
<b>Eligibility for admission</b>	Bachelors in any Life sciences (Botany, Biochemistry, Biotechnology, Environmental science, Life science, Microbiology, Zoology, Pharmacy, Veterinary science), B.Tech (Biotechnology)
<b>Method of Selection</b>	Entrance test and Interview
<b>Proposed structure</b>	Attached in Annexure I

# PROGRAMME PROJECT REPORT (PPR)

Course: M.Sc. Industrial Biotechnology Duration: 2 Years

## I- BACKGROUND

Known for its 160 years legacy, Elphinstone college, a constituent college of Dr. Homi Bhabha State University is the first Cluster University of Maharashtra State, Established in February 2019 under Rashtriya Uchchar Shiksha Abhiyan (RUSA) program of Government of India. Elphinstone college has served the nation for more than 160 years through value-based education and philosophy and upholds a mission of excellence in education. Dr. Homi Bhabha State University is working relentlessly for the development of different courses in the light of New Education Policy-2020 considering the benefits of all the stakeholders to achieve all-round development of students and in lieu to this, Department of Biotechnology of Elphinstone college is offering a two years Post graduate degree M.Sc. in Industrial Biotechnology from the academic year 2021-22.

## II. HIGHLIGHTS OF THE COURSE

Industrial Biotechnology is also known as White Biotechnology. Industrial Biotechnology is the study of the use of enzymes and the use of microorganisms is done to make bio-based products in various sectors such as chemicals, food ingredients, paper, textiles, and many other industries. Industrial Biotechnology is one of the most important fields in working for the implications of health and medicine.

The scientists in this field can create new medicines that are required for the treatment of cancer patients, synthetic human growth hormone and synthetic insulin. Industrial Biotechnology has been a boon to the industry in recent times that has occurred in the field.

The course curriculum that is designed for Industrial Biotechnology is to impart the required knowledge to the candidates and make them better in the course.

- The Industrial Biotechnology course curriculum offers studies on the different methods that are used for producing and processing the different materials, bioenergy, and also the other products .
- The students also learn how to use the micro-organisms or the enzymes that are required for manufacturing the products.
- The experts come up with the ideas and share the ideas with the learners that can be used for

manufacturing products by using less energy, reducing the waste and also ensuring that the final product is produced economically.

- It examines how biotechnology enables the use of renewable resources in industry, thereby increasing efficiency, decreasing pollution, and reducing energy usage and waste production during various types of industrial processing.

### **Scope of Industrial Biotechnology**

- Though the Industrial Biotechnology industry has been a boon, it is still growing, giving more career opportunities to the individuals. It is one of those industries that is growing slowly and steadily, but there is tremendous growth in the field.
- Most companies are now switching to using biotechnology for sustainability for a long-term basis. The scope of Industrial Biotechnology course is to give opportunities to make a change in the field of development. The field of Industrial Biotechnology is gaining a lot of support from the Government and is also funding to allow the companies in developing the processes that are involved in the change.
- The Industrial Biotechnologists can get various employment opportunities in various fields which will eventually help them enhance their career. Therefore, the scope of the Industrial Biotechnology field is eventually good not only in India but also abroad.

### **III. CAREER & JOB OPPORTUNITY**

- The course is beneficial for individual to develop a career in a number of related areas including: pharmaceutical and fermentation industries, as well as recombinant DNA and microbial related research laboratories.
- The learners can find careers with pharmaceutical companies, food manufacturing and processing industries, public funded laboratories, chemical, agriculture, environment control, waste management, energy, and allied industries.
- Biotechnologists can be employed in the areas of planning, production and management of bio-processing industries.
- They can become teacher and lecturer in schools and colleges respectively; for becoming permanent lecturer in college/universities only after completing UGC-NET exam.
- Some of the job profiles in this field are Trainee Research Associate, Technical Solution Manager, Accounts Manager, and many other job profiles.

#### **IV - DESIGNING THE CURRICULUM**

The curriculum of M.Sc- Industrial Biotechnology is designed considering the need and expectations from various stakeholders, feedback, and in consultation with academicians, research associates & industry experts, scholars from relevant field. The program aims in integration of all life science streams blended with technology. The curriculum for the MSc program is designed to prepare them for careers in 21st century -industrial, pharmaceutical environmental research and entrepreneurship in biotechnology. The course is structured to give students career options in various fields including academic work in a diversity of graduate and professional programs as per UGC guidelines.

The teaching and learning methods would incorporate:

- Contact classes, online and offline methods.
- Hands-on training provided for practical orientation.
- Independent project work to stimulate problem analysis, techniques for resolving the problem and probable solutions to the same.
- Research Project.
- Industrial Training

#### **Relevance of the programme with HEI's Mission and Goals:**

The mission of the HBSU University is to bring active learners in the higher education and contribute to cost-effective as well as scientific development.

## **V. PROGRAM OUTCOMES (POs)&PROGRAM SPECIFIC OUTCOMES(PSOs)**

### **PROGRAM OUTCOMES (POs)**

1. The learners will be able to apply knowledge of basic sciences (Biochemistry, Microbiology, Biology, Biotechnology) in getting solutions to issues pertaining to biotechnology, biochemical, biopharmaceutical and allied industries.
2. The learners should be able to systematically break up complex processing problems in realizable steps and find solutions.
3. The learners will be able to design and develop a process, a product or a component of a biotech system or provide a technological solution for a specific task within realistic constraints.
4. The learners will be able to design and conduct experiments as well as analyze and interpret data.
5. The learners will be able to use modern tools, software, equipment etc. to analyze and obtain solution to the problems.
6. The learners will be able to study the impact of Bioprocess, Pharmaceutical, Food and Beverage, Agricultural industry in the global, Economic, and Societal context.
7. The graduates will be able to practice their profession considering environmental protection and sustainability.
8. Graduates are expected to practice professional skills in an ethical manner.
9. The graduates should have competence to undertake designated task on individual or team basis as per the requirement.
10. The graduates will be able to communicate effectively their points of view.
11. The graduates will acquire attitude for life- long learning.
12. The graduates will be prepared to participate in project and financial management.



### **PROGRAM SPECIFIC OUTCOMES(PSOs)**

1. Graduates will be acquainted with the latest development in different fields of biotechnology viz; fermentation, medical, environmental, agricultural, food production and processing, pharmaceutical, health and wellness so as to enable them to take up higher studies, research & developmental work.
2. Graduates will be introduced to industrial bioprocessing and technology managerial subjects, so as to enable them to take up further studies in technology development, technology translation & function effectively as managers.
3. Graduates will be equipped with IPR, patent filing, patent laws etc opening up avenues for the upcoming field of patenting and patent laws and regulations.
4. Graduates will be well versed with modern analytical techniques and instrumentation to be used in various industries.
5. Graduates will gain knowledge in the field of nanotechnology, PTC and ATC, Genetic engineering, Genomics and proteomics and Bioinformatics.

## VI-. PROPOSED STRUCTURE

### ANNEXURE-I Proposed structure for MSc- Industrial Biotechnology

SEM	Core Courses Credits: 4	DE/ IE Credits: 4	GE Credits: 2	AE- Credits: 2	SE- Credits: 4	Lab/Projects	Total Credits
I	CC1 01	IE101	GE101	AE101	-----	2 Credits * 4 Lab = 8 Credits LB1=50 Marks LB2=50 Marks LB3=50 Marks LB4=50 Marks Total 200 marks 8 credits	CC:4*3=12 IE:4*1=4 AE: 4*1=4 Lab = 8  Total = 28
	CC1 02						
	CC103						
I	CC2 01	IE201	-----	-----	SE201	2 Credits * 4 Lab = 8 Credits LB1=50 Marks LB2=50 Marks LB3=50 Marks LB3=50 Marks Total 200 marks 8 credits	CC: 4*3=12 IE: 4*1=4 SE:4*1=4 Lab = 8  Total = 28
	CC2 02						
	CC203						
I	CC301	DE301	GE301	AE301	-----	Dissertation Project (200 Marks) 8 credits	CC: 4*2=8 DE: 4*2=8 GE: 2*1=2 AE: 2*1=2 Project= 8 <b>Total = 28</b>
	CC302	DE302					
I V	INDUSTRIAL TRAINING -12 to 15 weeks						Industrial Training=20 Report and presentation= 8 <b>Total = 28</b>
							Course Credit = 112

Non- CGPA -MOOC's and/or Courses/Extra can be opted by students in semester I & II

## **VII - ELIGIBILITY**

- B. Tech. degree with minimum 60% marks or equivalent in Industrial Biotech (BE), Pharmaceutical Technology, Food Technology, B.Pharma, and Dairy Technology .
- Bachelor's Degree (Biotech) with minimum 60% marks or equivalent in Life Sciences, Botany, Zoology, Bio-chemistry, Microbiology, Genetics, and Pharmacology.

## **VIII- EVALUATION**

- University end semester examination: 50/100/150 depending on the credit allotment marks for each course
- Internal Assessment: 40 % (theory test, seminars, assignments)
- Independent Project work: 200 marks
- Job / training: 100 marks under SEC
- Industrial training and Report writing & presentation 700 marks

## IX -FEE STRUCTURE

### A. Tuition Fee

Sr. No.	PARTICULARS	MSc-I (In Rs.)		MSc-II (In Rs.)	
		OPEN CAT.	RESERVED CAT.	OPEN CAT.	RESERVED CAT.
1	Tuition fees	65000	65000	65000	65000

### B. Examination related Fee

Sr. No.	Fee Headings	Fee as Proposed	Remarks / Final Fee
3	Exam. Fees for all Subjects	3500	
4	Exam. Fees per Semester each Subjects ( ATKT )	500	
5	Photocopy Fees Per Ans.Book	250	
6	Revaluation Fees Per Ans.Book	800	
7	Convocation Fees	1000	
8	Degree Cert. Verification Fees	500	
9	Mark sheet Verification Fees	500	
10	Duplicate Mark sheet Fees	500	
11	Duplicate Degree Certificate Fees	700	
12	Migration certificate Fees	1000	
13	Bonafide Certificate Fees	300	

### c. Other Fees / Charges

Sr. No.	Fee Heading ( per Year )	Fees Proposed	Remarks / Final Fee
1	Application Prospects / Form Fee	50	
3	Application online Charges - PG	400	

4	I card College & Library I card ( 2 )	100	
5	Library Fee	500	
6	Gymkhana / Extra Curricular Fee	500	
7	Computer Lab Fee	500	
8	Internet Fee	500	
10	Project Fee – PG / IVs	5000	
11	Utility Fee	250	
12	College Development Fee	500	
13	<b>Vice Chancellor's Fund</b>	50	
14	<b>Students Welfare Fund</b>	50	
15	<b>Ashwmedh &amp; NSS Fees</b>	50	
16	<b>Disaster Relief Fund</b>	20	
17	<b>University Sports / Cultural Fee</b>	50	
18	<b>Alumni Association Fee</b>	100	
19	<b>Student Group Insurance Fee</b>	100	
20	<b>Magazine / Souvenir Fee</b>	150	
21	<b>Transcript Fees per University</b>	1500	As per Application
22	<b>Attestation Fees per University</b>	1000	As per Application

**D. Deposits ( refundable )**

Sr No.	Fee heading	Fee as Proposed
1.	<b>Caution Money</b>	1000
2.	<b>Laboratory Deposit</b>	1000
3.	<b>Library Deposit</b>	500
4.	<b>Computer Lab Deposit</b>	1000

